Stated Meeting, May 21, 1880.

Present, 7 members.

President, Mr. FRALEY, in the Chair.

A letter accepting membership was received from Dr. Wm. Thomson, dated 1502 Locust street, Philadelphia, May 1, 1880.

Letters of acknowledgment were received from the Royal Observatory of Prag, dated April 24, 1880 (102, 103); Natural History Society of Newcastle-upon-Tyne, April 28 (103, 104); Brown University, in Providence, R. I., May 1 (105); Maryland Historical Society, Baltimore, May 11 (105); Smithsonian Institution, Washington, May 8 (105); U. S. Naval Observatory, Washington, May 10 (105); Hamilton College, Clinton, N. Y., May 8 (105); and the Davenport Academy of Natural Sciences, May 4 (105).

Letters of envoy were received from Hofrath Adam Freiherrn Von Burg, dated Vienna, January, 1880; the Society of Physics, Geneva, January 13; the Natural History Society, Marburg, January, 1880; and the K. Leopoldinisch-Carolinischen Akademie, Halle, a.-S. January 2.

A letter was received from Charles Kraus, dated April 26, 1880, Pardubitz-Bohemia, asking for the Proceeding of the year 1879.

A letter was received from the U. S. Naval Observatory, asking for Proceedings Nos. 5, 67, 68, 93. On motion it was referred to the Secretaries for action.

Donations were received from the Royal Society of New South Wales; the Observatories at the Cape of Good Hope, St. Petersburg, and Greenwich; Academies at St. Petersburg, Dresden, Dijon, and Brussels; Vereines zur Beförderung des Gartenbaues, Berlin; Anthropological Society, K. K. Geological Committee, and Hofrath Adam Freiherrn von Burg, Vienna; Editors of the Zoologischer Anzeiger, Leipsig; Royal Society, Göttingen; Zoological Gar-

den, Frankfurt, a.-M.; Editors of the Neues Lausitzisches Magazin, Görlitz; Natural History Society, Marburg; Physical Society, Geneva; Bureau des Longitudes, Society of Antiquaries, Annales des Mines, and Editors of the Revue Politique, Paris; Physical and Geographical Societies, Bordeaux; Editors of the Revista Euskara, Pamplona; Royal Institution, Royal Geographical Society, Meteorological Society, Editors of Nature, and Lords of the Admiralty, London; Glasgow Geological Society; Editors of the Canadian Naturalist, Montreal; Massachusetts Historical Society; Peabody Museum, and Museum of Comparative Zoölogy, Cambridge; Editor of the North American Entomologist, and Young Men's Association, Buffalo; Mr. Barclay and Mr. Henry Phillips, Jr., Philadelphia; the Bureau of Education, and Mr. Asaph Hall, Washington; Cincinnati Society of Natural History; State Historical Society, Madison, Wisconsin; Missouri Historical Society, St. Louis; and the National Museum, Mexico.

Mr. Henry Phillips, Jr., read a paper entitled, "Some recent discoveries of stone implements in Africa and Asia."

Prof. Cope made some remarks "On certain Tertiary Strata of the Great Basin."

In Vol I of the Report of the United States Geological Survey of the Fortieth Parallel, page 393, the able author, Mr. King, has described an extensive series of beds, including many laminated shales, which are found in the northern part of Nevada, as constituting an extension of the Green river formation west of the Wasatch mountains.* He states that they contain the same species of fossil fishes as those of the Green river epoch. I published the first notice of this formation, which I examined at Osino and at Elko, Nevada,† and described from it two species of fishes, which were referred to genera previously unknown, viz: *Amyzon* and *Trichophanes*. These genera have not been found represented in the fish fauna preserved in the Green river shales, which embraces eight genera and twenty-four species. But they occur in several species and specimens in the South Park of the Rocky mountains of Colorado, associated with the genera *Rhineastes* and *Amia*, neither of which has yet been found in the Green river formation. The first named is common in the Bridger, but in a different form, and the generic identity is not yet fully established. The *Amia* is

*l. c. I. p. 393.

† Proceedings Amer. Philos. Soc. 1872, p. 468.

represented in the Bridger by *Pappicthys*, but in the former genera the characteristic parts have not yet been seen in the South Park specimens, so that here also the determination of the genus is not final. It, however, remains that this fish fauna is different from that of the Green River beds, and the modern aspect of the genera points to an age even later than the Bridger. It is evident that the pertinence of this series of rocks to the Green River formation, asserted by King, cannot be maintained.

In the American Naturalist for May, 1879, I named the strata of this epoch that of the Amyzon beds, from the characteristic genus which it includes, and refer it to the later Eocene or early Miocene eras. Its fish fauna includes ten species, distributed, as follows : *Trichophanes* Cope, 3 sp.; *Amyzon* Cope, 4 sp.; *Rhineastes* Cope, 1 sp.; *Amia* L., 2 sp.

There is a series of calcareous and silico-calcareous beds in Central Utah in Sevier and San Pete counties, which contain the remains of different species of vertebrates from those which have been derived from either the Green River or Amyzon beds. These are *Emys*, sp.; *Crocodilus*, sp.; *Clastes cuneatus* Cope, and a fish provisionally referred to *Priscacara* under the name of *P. testudinaria* Cope. Dr. Hayden first directed my attention to these fossils, and I am indebted to the kindness of the director of the Museum of Salt Lake for the loan of specimens. I afterwards sent a collector to the region, and he obtained a number of fossils.

There is nothing to determine to which of the Eocenes this formation should be referred, but it is tolerably certain that it is to be distinguished from the Amyzon beds. In its petrographic characters it is most like the Green river, as it consists in large part of shales. The laminæ are generally thicker than those of Green and Bear Rivers. The genera Crocodilus and Clastes have not been found heretofore in Green River beds, although they are abundant in the formations deposited before and after that period. Until its proper position can be ascertained, I proposed that the formation be called the Manti beds. (See American Naturalist, April, 1880.)

The regions of the John Day River and Blue Mountains, furnish sections of the formations of Central Oregon. Above the Loup Fork or Upper Miocene, there is a lava out-flow, which has furnished the materials of a later lacustrine formation, which contains many vegetable remains. The material is coarse, and sometimes gravelly, and it is found on the Columbia River, and I think also in the interior basin. Prof. Condon, in his unpublished notes call this the Dalles Group. It is in turn overlaid by the beds of the second great volcanic outflow. Below the Loup Fork follows the Truckee Group, so rich in extinct mammalia, and below this a formation of shales. These are composed of fine material, and vary in color, from a white to a pale brown and reddish-brown. They contain vegetable remains in excellent preservation, and undeterminable fishes. The *Taxodium* nearly resembles that from the shales at Osino, Nevada, and on various grounds I suspect that these beds form a part of the "Amyzon Group" (American Naturalist, June, 1880), with the shales of Osino and of the South Park of Colorado. Below these, is a system of fine grained, some-

times shaly rocks of delicate gray buff and greenish colors, containing calamites, which Prof. Condon calls the *Calamite* beds. Their age is undetermined.

In the existing Geological maps of Oregon, the Coast range is represented as composed of Archæan rocks. This is a serious error. Prof. Newberry has already stated (U. S. Pac. R. R. Surveys, Vol. VI, pt. II, p. 29), that the fossils of the range are of an age not older than the Miocene. The unpublished notes of Prof. Condon, formerly State Geologist, state that the back bone of the Coast range consists of argillaceous shales which contain invertebrate and vertebrate fossils, frequently in concretions. Some of the latter are Physoclystous fishes, with strongly ctenoid scales. To this formation, Dr. Condon gives the name of Astoria shales. Above this is an extensive tertiary deposit, rich in Mollusca, which is usually interrupted by the central elevations of the mountain axis. Prof. Condon refers this to an Upper Miocene age, under the name of the Solen beds. On the flanks of the mountains, this is overlaid by a pliocene formation, containing some of the fossils of the Equus beds of central Oregon. This is both underlaid and overlaid by basalt, and other volcanic products.

Dr. Hayden made a few remarks further illustrating the same subject.

The Report of the Board of Officers and Council was submitted.

Mr. Eli K. Price, Chairman of the Committee on the Michaux Legacy, reported that the copy of the portrait of Mr. Michaux, as ordered by the Society, had been executed, and that he had inspected the same at the rooms of the Society; that the likeness was good and that after certain changes in the background that he would recommend its acceptance by the Society.

Pending nominations Nos. 904 and 909–917, and new nominations Nos. 918 and 919 were read.

And the meeting was adjourned.